

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

ORIGINAL

In the Matter of

Request by A.C. Nielsen Co. to
Transmit Automated Measurement of
Lineups (AMOL) Information on Line 22
of the NTSC Television Service.

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DA 89-1060

RECEIVED

SEP 22 1989

Federal Communications Commission
Office of the Secretary

Comments of the
NATIONAL ASSOCIATION OF BROADCASTERS

The National Association of Broadcasters¹ ("NAB") hereby submits its comments in response to the Commission's request² that interested parties comment as to whether the Nielsen Automated Measurement of Lineups (AMOL) system, currently residing on line 20 of the vertical blanking interval (VBI), would degrade the visible television picture if implemented on line 22. These comments focus generically on the overall impact of any service granted permissive use of line 22 for special functions. NAB poses a long term question as to whether other active video lines, used for video program content, are "safe" from future encroachment of special signals. We also feel that systems such as AMOL may use available line time in an inefficient manner, thus precluding potential additional uses and increasing the pressure to employ additional active video lines. As such, NAB believes the Commission should consider initiating an inquiry to explore possible limits and standards for the use of National Television Systems Committee ("NTSC") active video.

¹ NAB is a non-profit incorporated association serving and representing America's television and radio stations and all the major networks.

² Public Notice No. DA 89-1060, released September 1, 1989.

I. Introduction.

On July 18, 1985, the Commission granted permissive authority for stations to transmit encoded advertiser identification signals using the encoding technology supplied by Telescan Inc. on line 22 of the active video signal.³ Authority has also been granted for station use of the services of Ad Audit Inc.⁴ and Air Trax Inc.⁵ for the same types of purposes on line 22. In its request, A.C. Nielsen Co. asks for similar permissive authority to allow station transmission of the AMOL system on line 22, a service currently implemented on line 20 of the vertical blanking interval (VBI).⁶ Previously, the Commission has authorized services qualifying as "special signals," with the proviso that: (a) television licensees retain ultimate control over their transmissions and not be required to include the encoded signals; and (b) the inclusion of these signals will not produce degradation of the television service received by viewers⁷.

Nielsen seeks access to the signal area that has been previously deemed available to other users for similar purposes. While there currently is some debate over whether the first criterion of the Commission will be met under the AMOL system,⁸ our primary concern

³ See letter to Burton Greenberg from James C. McKinney, Mass Media Bureau Chief (July 18, 1985). See also Public Notice, released June 10, 1985 (establishing pleading cycle on Telescan request).

⁴ Ad Audit was also granted permissive authority for line 22 usage on July 18, 1985. See n. 3 supra. Also see Public Notice released June 21, 1985 (establishing pleading cycle on Ad Audit request).

⁵ Republic Properties Inc. was granted permissive authority for use of line 22 on November 6, 1986. The Republic Properties approval was transferred to Air Trax, Inc. by letter of the Acting Chief, Mass Media Bureau, dated August 28, 1987.

⁶ The VBI represents the period of time necessary to allow the display device to prepare for its next vertical scanning cycle. See p. 4, infra.

⁷ See n. 3, supra.

⁸ See July 28, 1989, letter to Alex D. Felker, Chief, Mass Media Bureau, from John G. Johnson, Jr., Counsel for Air Trax Inc. The Air Trax letter questions whether the "licensee retention of ultimate control" criterion would be ensured under AMOL.

instead rests with the long range implications stemming from the concept of allocating, even on a permissive basis, signal space reserved for visual picture content to services that provide ancillary broadcast functions, however useful or worthy they might be.

NAB strongly supports the Commission's first requirement that licensees retain ultimate control over their transmissions. Television stations must be able to control and modify, if needed, signals embedded within the NTSC system. But the second requirement -- non-degradation of service -- is somewhat less tangible to deal with in a purely straightforward manner, and will be examined in considerable detail in these Comments. Ultimately, we believe it would be desirable for the Commission to establish a standard or guideline to control access to the active video area. Specifically, whether television service is "degraded" to viewers will depend on the number of viewers which might see line 22. While this may be a relatively small number of viewers at the current time, trends in display manufacturing technology and new viewing circumstances are likely to cause this proportion to increase in the future. Moreover, since line 22 availability has already been granted to a multiplicity of services at the present time, we are extremely concerned that, when line 22 availability is exhausted, requests will be made for other lines that encroach even further within the active video area⁹. If continued unabated, considerable degradation of service due to the visibility of these lines shall result. The Commission should consider establishing specific standards as to use of the active video area of the television signal for applications other than delivering visual program content.

⁹ We note that line 22 "availability" is likely to be exhausted sooner, rather than later, when services using line 22, such as AMOL, Air Trax, or others, are designed without considering the need to conserve available line time. We feel that these companies do not now have strong incentive to conserve use of NTSC lines.

II. Line 22 is an Integral Part of the NTSC Active Video Area.

The NTSC signal format consists of 525 scanning lines that together represent one complete picture frame. One frame equalling one picture image, frames are then repeated in time approximately 30 times per second to produce the appearance of a constant image and allow rendition of motion. The 525 scanning lines in each frame are in turn composed of two fields, where one field comprises the even numbered lines of a frame while the other field includes the odd lines. The two fields are presented sequentially in time. Since frames repeat 30 times per second, fields will then repeat at approximately 60 times per second. This is the essence of the interlaced scanning system of the NTSC television standard.

Each of the 525 scanning lines of a frame, as well as being classified as to their field, can also be separated into either the vertical blanking interval (VBI) or the active video areas. The function of the VBI is to allow the scanning beam in the display device sufficient time to change the direction of beam deflection from the bottom of the screen back to the top of the screen in order to begin the next scanning field. Since by intent of design, there is no useful picture content during this vertical re-trace time, the signal to the display device is "blanked" during this time period, and hence the name vertical blanking interval. This time interval, although carrying necessary synchronizing information for the receiver, also contains a significant amount of information carrying capacity for data, test signals and other ancillary services. The use of the VBI for these purposes is specified in Section 73.682 in the Commission's Rules.¹⁰

¹⁰47 C.F.R. Section 73.682 (1988). See also Report and Order, MM Docket No. 84-168, FCC 84-50, released November 8, 1984 (increasing data services available for use in the VBI); and Report and Order, BC Docket No. 81-741, FCC 83-120, released May 20, 1983, 53 RR 2d 1309 (1983) (authorizing use of teletext in the VBI). Currently, as outlined in the Commission's Rules (73.682 (a) (21) and (a) (23) (i)), lines 10-21 are allocated for auxiliary services in the VBI. Some of these are authorized for specific uses, such as line 19 for Vertical Interval Reference Signal, and line 21 for closed

It would seem intuitive that viewers should see only the portion of the television signal that is not in the VBI. Since the maximum recommended VBI as specified in the Rules is 21 lines, line 22 would then be the first viewable line on television receivers.

Potentially, therefore, any data signal carried on line 22 or higher would, in many cases, be seen by viewers and inordinately detract from the viewing experience. For reasons discussed below, however, line 22 is not always observable, but it is likely to become more so in the future.

Manufacturers of television receivers typically employ the technique of "over-scanning" the display, whereby the center portion of the image fills the display screen while the extreme left, right, top and bottom edges of the active video area "spill" off the edge of the display and are hidden from view. In historical context, this was done primarily to avoid seeing aberrations near the edges of the video picture or smaller pictures under certain operational conditions. Especially in older receivers, displayed picture size was somewhat sensitive to manufacturing tolerances, aging of components, power line sagging ("brownouts") and overall picture brightness. Also, under conditions of transmission impairments, edges of video signals might not only be visible but might appear ragged and torn. In essence, receiver manufacturers have judged that an over-scanned full size image at all times was less of a degradation than the possibility of actually seeing the edges under various adverse conditions.

In practice, the amount of over-scanning employed by a display manufacturer is not standardized and varies considerably depending on the particular product. Over-scanning is usually specified in terms of percentage of the picture width (or height) that

captioning services. As well, line 20 has been authorized for Station Identification signals. Many other uses have been planned or implemented for this area, including test signals, teletext, ghost cancelation reference signals, commercial data distribution services and others.

is not viewable. Simple mathematics show that over-scanning in excess of approximately 1% would guarantee that line 22 would be hidden from view at all times. But technology is changing; trends for the future indicate that, increasingly, line 22 will become visible on certain types of TV receiver display devices.

Line 22 is, by the Commission's Rules, part of the active video area and as such, could rightfully be displayed.¹¹ The fact that over-scanning of cathode ray tube (CRT) displays (which are by far the most prevalent display technology in existence) typically will hide the line 22 signal does not mean that receiver manufacturers could not and will not reduce over-scanning further. Moreover, new display technologies not requiring over-scanning are being developed; and special displays in multi-media applications might promote more common use of under-scanning the displayed image and thus expose line 22 signals into view that were previously hidden. Trends in over-scanning percentage, new display technologies and multi-media applications are discussed below and indicate that the over-scan area is not as hidden and safe as it once was.

III. Receiver Over-scan Percentage Has Decreased Significantly.

A clear trend can be identified showing that the amount of over-scanning employed by receiver manufacturers has been decreasing. For example, the January 1977 issue of Consumer Reports found that the average over-scan was between 12 and 18%.¹² But in March 1987 the same publication showed that only 2 out of 39 sets tested exhibited 12% or greater over-scanning.¹³ Better component and modern design techniques, with consequent better regulation of high voltage power supplies, have permitted

¹¹ 47 C.F.R. Section 73.699, Figure 6 (1988).

¹² Consumer Reports Magazine, January 1977.

¹³ Consumer Reports 1988 Buying Guide Issue, pp. 330-337. Condensed report originally published in Consumer Reports Magazine, March 1987.

manufacturers to reduce over-scanning and maintain assurance that environmental conditions and aging will not result in significant picture shrinkage.

Another factor affecting over-scan reduction is the changing shape of displays. Whereas older style television tubes exhibited more rounded corners, more modern sets increasingly incorporate display faces with sharper corners. Since the video signal itself is rectangular, less over-scan is necessary with a rectangular display face than a rounded one in order to assure filling the picture screen.

Recent conversations with receiver manufacturers and industry representatives indicate that, typically, over-scanning percentage is now set at approximately 5% at the factory under worst case conditions. That is, the over-scanning is set under brightness and average picture level conditions that cause over-scanning to be maximized. Under more typical viewing conditions, the overall picture size will tend to decrease. Thus, the average 5% factory setting was chosen such that typical viewing conditions would produce less than 5% over-scanning. Under some conditions, over-scanning may, in fact, be very close to zero for some receivers.

While "direct view" CRT displays remain the mainstay of the consumer television world, other types of display technologies are being developed and introduced into the marketplace. Some of these technologies do not need the safeguard of over-scanning to guarantee avoidance of excessive picture shrinkage or distorted edges. These displays can elect to display the entire video signal or at least significantly decrease the percentage of over-scan. Flat screen technologies, such as LCD displays, can theoretically address specific points of the video signal to activate specific LCD cells on the display, allowing design freedom to display line 22 completely. While these and other flat screen technologies are in their infancy, products have been introduced and

the market potential for such displays is clearly acknowledged to be significant.¹⁴

In the home environment, usage of personal computers and home entertainment applications such as broadcast video rarely share the same display screen. This situation is doubtful to change in the near term. However, in educational institutions, corporate board rooms and presentation centers, mixed media use is quite common. In a classroom, for example, it might be typical to find a ceiling-mounted display that is used to present computer data on some occasions and off-air broadcast television in other instances. When dealing with display of computer data, it is typical practice for computer terminals to use the entire active area of the video signal to present visual information. Thus, in such an application, display devices must be used that do not over-scan the image or else the top lines of the computer display and the first and last columns of presentable data might not be seen. An optimized display for computer graphics that is also used to display broadcast television signals would then expose line 22 signals and cause distraction when used for the broadcast application. Typically, display products that are designed for such mixed use incorporate a manual switch whereby an operator or viewer can select between under and over-scan operation.¹⁵ However, it is common to find that, to accommodate the worst case, and in situations where the video monitor is relatively inaccessible, this selector switch might often be left in the under-scan position and rarely, if ever, changed. Use of line 22 data signals would degrade service to viewers in this context, since the line 22 data would clearly be viewable on an under-scanned display. Use of broadcast video presentation in institutional and corporate settings and the integrated incorporation of computer

¹⁴ Fueled by size, weight and power consumption advantages relative to CRT technology, flat screen displays are also enjoying a surge of development effort as an attractive potential method of introducing very large screen HDTV service.

¹⁵ Note also that display devices used in this type of application are normally video monitors only and not receivers (i.e. tuning and demodulation of broadcasts is done in a separate outboard unit and interfaced to the monitor as baseband video).

graphics and data display is an increasing trend that should not be overlooked.

IV. The Commission Should Establish Definite Limits for Auxilliary Uses of the Active Video Area.

Precedent has been set for usage of line 22 in the application of "special signals" and it is likely that more and more services will wish to make use of it. Line 22 capacity is limited and, as more services demand consideration, the capacity of line 22 will not be sufficient to satisfy those needs. In addition, current line 22 services are ultra-conservative in design. Experts may disagree as to whether the information carried uses the available signal space efficiently. For instance, it seems questionable whether the information carried by Air Trax, Nielsen or others is required to be repeated every field or frame, opening the possibility that time multiplexing of several such services might be feasible, thus conserving available line time. Broadcasters would appreciate the opportunity to participate in industry discussions concerning the most efficient use of available signal space and the need to maintain superior quality of the viewable signal.

Our major concern in this regard is that no hard limits have been set that would protect lines 23, 24 and higher from requests similar to those currently requested of line 22. Given that the viewable image area is, as developed above, tending to increase, a conflict eventually will arise with the "extended VBI," which seems also destined to increase. It is of utmost concern that non-image services eventually may encroach the active video area, degrading service to the public as a consequence.

V. Conclusion.

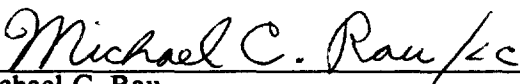
The Commission has sought comment on the visibility of data signals placed on line 22. We have shown that it is increasingly likely that, as time goes on, more and more viewers will be able to view lines in the active video area that have previously been hidden by receiver over-scanning. This issue should be addressed by the Commission

with a view towards establishing the minimum active video area that may not be shared by auxiliary data services.

Comment should be sought from all affected parties and a clear perspective on this issue established. In such a proceeding, the Commission would seek comment from broadcasters, advertisers, data service providers, advanced television system developers, receiver manufacturers, studio equipment manufacturers and others as to their position on this matter. The goal of this proceeding would be to insure that there be no encroachment in the NTSC active video area that would hinder the ability of television stations and receiver manufacturers to provide the public with the highest quality NTSC service.

Respectfully submitted,

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September 22, 1989

CERTIFICATE OF SERVICE

I, Catherine McManus, do hereby certify that true and correct copies of the foregoing "Comments of the National Association of Broadcasters," were served by First Class United States Mail, postage prepaid this 22d day of September 1989, to:

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